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## (54) TRANSFERRING METHOD

## (57)Abstract:

PROBLEM TO BE SOLVED: To facilitate transfer without necessity of complicated manual operation and without necessity of using a large quantity of water in principle without necessity of heating at all.

SOLUTION: To transfer a transfer material carried with a transparent film of colored or deposited thermoplastic resin to an opponent material to a base sheet having releasability, the transfer material or opponent material or both are previously coated with adhesive, the transfer material and the opponent material are pressurized while the adhesive remains moistened, and the base sheet is released after the adhesive is dried or cured.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] this invention relates to the imprint method which does not need heating at all in more detail about the imprint method.

[0002]

[Description of the Prior Art] There are some which use together both, such as a heating imprint, a water imprint, and this, in the conventional replica method. As a typical example of a heating imprint, there are sublimation copy printing, hot stamping (Hot Stamping), etc. by the disperse dye to a synthetic fiber, and there are pottery and an imprint mark as a water imprint. There is wet copy printing as a method of on the other hand using water and heat together.

[0003] A heating imprint requires the processing in the elevated temperature around at least 200 degrees C, and its loss of energy is large.

[0004] although pottery and an imprint mark have the water imprint in use by the slide imprint method - a lot of water -- consuming -- \*\*\*\*\* -- it is a perfect manual operation and skill is required considerably In addition, in the case of pottery, you have to leave it for at least 24 hours in order to make moisture emit completely and to make it dry by baking after an imprint. Moreover, hot dryness is needed in order to cover the long time gap.

[0005] An imprint mark is deficient also in after an imprint to water resistance, and it is raising the adhesion to a partner material at the same time it performs processing called varnish length and covers the imprinted pattern with this waterproof varnish,

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in order to perform strong finishing. However, all the processes from an imprint to varnish length must be performed by the handicraft, and it is very inefficient. Wet copy printing using a lot of water and heat needs steaming, soaping, and many complicated processes of rinsing.

[0006]

[The subject for discussion which invention tends to solve] The technical problem which this invention tends to solve is developing the new imprint method without the difficulty of the conventional imprint method, and is developing the method of imprinting easily, without not needing heating at all, not using a lot of water in principle in more detail, and requiring a complicated handicraft.

[0007]

[The means for solving a subject for discussion] Let the base sheet which has the detachability which supports the thermoplastics coat which prepared transparence, coloring, or the vacuum evaporatio layer be imprint material. While using, applying adhesives to both, such as this imprint material, a partner material, or this, and not hardening [ these adhesives get dry or ], it piles up with a partner material, pressurizes (namely, while having wetted wet), and is solved by making a base sheet exfoliate after dryness of adhesives or hardening.

[0008]

[Embodiments of the Invention] The base sheet which has the detachability as used in the field of this invention makes the paper which has detachability, and the sheet of synthetic resin the example of

representation, and can illustrate them. As paper which has detachability, various kinds of papers processed by an exfoliation component, a polyethylene glycol, etc. of the usual exfoliation component, for example, a silicon system, an urethane system, a fluorine system, and a wax system are used, and various kinds of papers large also as the paper itself can be used.

[0009] What what [ various kinds of ] is large also as synthetic resin was used, and was excellent in dimensional stability, such as polyester and a polyolefine, is desirable. In this invention, the coat of the thermoplastics formed on the above-mentioned base sheet is usually formed by the thickness of 2micro - about 10mm, and 10micro-its 100micro are preferably desirable from the standpoint of economical efficiency and workability. Especially the means forming of this coat itself is not limited, but, in short, the coat should just be formed on the base sheet. Typical means forming may make coating, a printing means, and the thing beforehand fabricated in the shape of a sheet install tentatively.

[0010] with the ground with this transparent and colorless thermoplastics coat -- \*\*\*\*\* -- moreover, printing and coating -- the whole surface -- or -- being partial (to the shape of a pattern) -- it may be colored Moreover, a vacuum evaporatio film can also be given if needed. As a vacuum evaporatio film, various metals, for example, aluminum, chromium, gold, silver, etc. can be used, and it is not limited to the kind of vacuum evaporatio means metallurgy group.

[0011] Coloring may adopt which methods, such as letterpress, gravure, flexo ones, the silk screen and lithography, and coating. although thermoplastics does not ask the kind -- as a thing desirable, for example -- a vinyl system, an urethane system, an ester system, acrylic, and me -- a phon system resin can be illustrated In addition, when lithography colors, a to some extent tough coat by which a coat is not stripped off by the adhesiveness 200poise or more which lithography ink has should be chosen, and the general coat for hot stamping should be avoided by the reason for the ability not to bear the adhesiveness of lithography ink.

[0012] With the adhesives as used in the field of this invention, even from a water type to emulsions, solvent types, the adhesives of further a hardened type, and printing ink including a starch paste are widely included in the range. If a typical thing is described, although it will be as follows, it does not limit to this.

[0013]

Water type : Gelatin, a starch paste, a dextrin, cellulose derivative, etc.

emulsion type: -- polyvinyl acetate, acrylic, and me -- resin emulsions, such as a phon system

Solvent type : What dissolved resins, such as an acrylic, ester, urethane, urea synthetic rubber, a cellulose system, and a silicon system, in solvents, such as ketones, ester, an alcohols cellosolve, and an aromatic hydrocarbon.

Printing ink : various printing ink is contained.

Hardened type adhesives : What consists of an epoxy resin system, a cyanoacrylate system, and an acrylic resin.

It is more desirable to use the means of coating or printing for it generally to a small partner material and the partner material of a complicated configuration, although hand coating is sufficient as the method of application.

[0014] A binder does not contain in the adhesives of this invention in principle. However, it can replace with adhesives in \*\* et al. and this invention, and the part or all can be replaced with a binder. While having wetted wet compares a binder with adhesives, and the reason for replacing with and using a binder for adhesives has the big effect that it is very long and it is not necessary to process for a short time for this reason. Under the present circumstances, what is known from the former as a binder to be used can use it widely, for example, pressure sensitive adhesives, such as a rubber system, acrylic, and a silicon system, can be illustrated.

[0015] although the partner material used by this invention makes it direct in principle for the material which cannot be printed -- a use and the purpose -- printing -- easy paper may also be used Although what is necessary is just to apply adhesives to imprint material or a partner material generally, the need of applying to both imprint material and a partner material can consider the following case.

[0016] 1) When 2 liquid hardening type adhesives are applied to 1 every liquid, imprint material, and

each partner material and a strong imprint object is obtained.

2) When suction of a partner material is intense, the adhesives applied to the partner material serve also as the work as filling material, and show firmer adhesion.

3) When the ceramic color which cannot carry out in glaze easily due to a ceramic imprint is used.

[0017] One of the big features of this invention may be pressurized while adhesives are damp. Namely, what is necessary is just to pressurize \*\*\*\* instead of what uses both heating and pressurization like the usual hot stamping.

[0018] It makes it indispensable to perform this pressurization, while adhesives are damp. While [ this / "while having wetted wet" ], while adhesives do not fully consider hardening as dryness is said. The pressure of the grade which does not need a big pressure but is usually pushed especially by hand is enough as the pressurization in this case.

[0019]

[Example] Although an example is shown below, unless it refuses especially, all numeric values shall show a weight ratio.

[0020]

[Example 1] the it top after making the thickness of 20micro carry out application dryness of the "you rack C3211U" (the product made from Hirono Science Industry, polyester/acrylic) with a roller coater to the base sheet which consists of a silicon releasing paper "KP-8" (product made from Phosphorus Tex) - "number one" 4 color made from T&KTOKA -- a set -- the graphic design of color photography was lithographed in lithography ink Roller coating of the "you rack C3211U" is carried out to the imprint material made in this way after ink dryness as adhesives, the soft-polyvinyl-chloride system processing sheet called "Toray Industries -501 white" is piled up and rolled round to the inside where these adhesives do not get dry, and it waits for dryness of adhesives. When the base sheet after dryness was made to exfoliate, the strong imprint object was obtained in the form where the ink pattern was sandwiched by a synthetic-resin coat and adhesives.

[0021]

[Example 2] The silk screen varnish by the imperial ink company and the "auction call XG" are performed by the completely same method as an example 1 as adhesives except carrying out silk screen printing to imprint material. The same result as an example 1 was obtained.

[0022]

[Example 3] A cheesecloth is used instead of the soft-polyvinyl-chloride system processing sheet of an example 2, and also [ all ] the method of an example 2 is followed. The imprint object became a riser like urethane leather cloth.

[0023]

[Example 4] Lithography ink and silk screen ink as shown below are prepared.

- Lithography ink A "KP ceramic blue" (3 star ink company make)
- Lithography ink B "KP62 blue A" (3 star ink company make)
- Silk screen ink "M8 meta-flux" (day product made from \*\*\*\*\* Co.) ..... 84 weight sections
- Hydroxypropyl cellulose (HPC) (Nippon Soda Co., Ltd. make) .. 12 weight sections
- Ethylcellosolve ..... 72 weight sections compound is \*\*\*\*(ed) with 3 rolls, and it considers as the ink for the silk screens.

[0024] A peduncle pattern is made to form lithographic inks A and B in the imprint material base which calls a EVA (ethylene / vinyl acetate system) film with a thickness of 50micro "ERUFAN OH501" (Nihon Matai Co., Ltd. make) which carried out tentative installation support on a base sheet by offset printing separately.

[0025] Let the imprint material obtained in this way be the imprint material A and the imprint material B, respectively. It prints by screen ink as stated above to up to the imprint material A, and a tile is piled up, pressurized and \*\* dried while this ink is damp. Let the tile with a peduncle pattern which the base sheet after dryness was made to exfoliate and was obtained be the imprint object A.

[0026] While having still wetted wet, each other is made to face, and both make it for this ink to perform silk screen printing similarly to up to the imprint material B, and to perform silk screen printing also to a

tile simultaneously on the other hand, and dry, piling up and pressurizing. A base sheet is made to exfoliate after an appropriate time. In this way, let the obtained tile with a peduncle pattern be the imprint object B.

[0027] The imprint objects A and B were put in into the furnace, and for 1000 degrees C and 30 minutes, when baking was performed, the pottery of the tone with an endurance stain of blue Isshiki was obtained.

[0028]

[The example 1 of comparison] In the imprint material B, when silk screen printing is performed only to imprint material or silk screen printing is performed only to a tile, what was baked thoroughly is deficient in ingress.

[0029] In addition, the state where the tentative installation as used in the field of this example does not separate at all during printing although the synthetic-resin film sticking to the base sheet separates simply by hand is said. That is, although it is easy to remove, it is in the state of being hard to separate.

[0030] Moreover, the silk screen ink as used in the field of this example has the duty of both adhesives and a cover coat.

[0031]

[Example 5] The two following kinds of lithographic inks are prepared. It considers as lithographic inks 1 and 2, respectively.

Ink 1 "MEJUUMU for No2 synthetic papers" (product made from T&KTOKA)

Ink 2 "Macrolex Fluorescent Yellow 10GN" (Beyer company make) ..... 1 weight section Super-gloss medium (Dainippon Ink make) ..... About 4 weight sections ink 2, each above-mentioned component is \*\*\*\*(ed) with 3 rolls, and it considers as ink 2.

[0032] To the art paper which has printed the night view using the ink of super-lightfastness beforehand, offset printing is performed for a stellar pattern by the lithographic ink 2, and a stellar pattern is printed after this ink's drying to it using a lithographic ink 1. While ink 1 is still damp, it piles up as imprint material to up to the star whose "aluminum vacuum evaporation foil TX series" gold and silver made from kuru TSUJAPAN are not dried, and a lithographic ink 1 is dried in the state of \*\*\*\*. If the polyester film which is the base sheet of a vacuum evaporation foil is made to exfoliate, the gold which has a gorgeous specular gloss, and the pattern of a silver star will be done. furthermore, the imprint object top made in this way -- "you rack C2800U" (the Hirono chemical-industry company make, urethane/acrylic) -- roller coating is performed on the whole surface by the coating material Thereby, with the solvent of a coating material, a lithographic ink 2 produces a migration phenomenon and emits a psychedelic fluorescence color (yellow).

[0033] Generally, the fluorescent ink for lithography offset printing is very deficient in lightfastness, and cannot be used for an outdoor poster. It is offset printing, and the fluorescence color shown in this example shows \*\*\*\*\* lightfastness, it is suitable also as an outdoor poster and, moreover, can use it as a display for a light rise with combination with a vacuum evaporation foil.

[0034]

[Example 6] Roller coating of the "you rack C3211U" is carried out to a silicon release paper "KP-8", and lithography (offset) printing of the stellar mark is carried out by the lithographic ink 2 used in the example 5 after dryness. While lithography (offset) printing of the stellar mark was carried out to a place which is different by the lithographic ink 1 used in the example 5 after dryness and ink is still damp, this ink is dried in the state of the stellar upper HE superposition which wetted wet the "vacuum evaporation foil TX series" silver made from kuru TSUJAPAN, and \*\*\*\* (pressurization). After an appropriate time, the base sheet of a vacuum evaporation foil is made to exfoliate, and roller coating of the "you rack C2800U" is carried out as adhesives all over printed matter. While these adhesives are still damp, it piles up with the soft-polyvinyl-chloride system processing sheet used in the examples 1 and 2, and pressurizes. If the silicon release paper which is a base sheet is made to exfoliate after adhesives carry out dryness hardening, the rain with which a psychedelic fluorescence color (yellow) and a gorgeous silver star shine will not be lost, either, but a wind will also be lost, it will twist, and the display for a light rise of endurance will be done extremely.

[0035]

[Example 7] First, the two following kinds of ink, i.e., a lithographic ink and silk screen ink, is prepared.

- Lithographic ink "KP ceramic blue" (3 star ink)

- Silk screen ink [ ..... 72 weight \*\*\*\* and the above-mentioned combination component are \*\*\*\* (ed) with 3 rolls, and let them be ink. ] "M8 meta-flux" (day \*\*\*\*\*) ... 84 weight sections HPC (Nippon Soda) ..... 12 weight sections ethylcellosolve

[0036] All over a base sheet and "KP-8" (phosphorus tex company make), roller coating of the "you C3211U" (the Hirono chemical-industry company make, polyester/acrylic) is carried out, a small peduncle pattern is offset by the above-mentioned lithographic ink, and it screen-stencils on the whole surface in the above-mentioned silk screen ink to up to it further, and let this be imprint material.

[0037] This imprint material is coated with an emulsion type binder "cage BAIN BPW5710" (Toyo Ink make), it is covered in silicon paper "KP-11" (LINTEC Corp. make), and is left as it is. The imprint material which made the release paper "KP-11" exfoliate is twisted around the circumference of the flower vase made from earthenware of white solid color, and a base sheet is exfoliated. If a flower vase is prepared to a furnace and 1000 degrees C and 30-minute baking are performed, the design of endurance with a tone peduncle with a stain will be given to the circumference of a flower vase.

[0038] Thus, instead of adhesives, when thinking that it will be kept for a long period of time, without using imprint material immediately, and will use at the time of liking, if you use the general-purpose binder like the above, it is convenient.

[0039]

[Example 8] A double-sided tape is used instead of the adhesives (binder) used in the example 7, and also it carries out by the completely same method as an example 7. However, the silicon release paper which is supporting the double-sided tape just before use is made to imprint to the flower vase made from earthenware, without removing as it is. What is necessary is just to remove just before an imprint. Thus, the completely same result as an example 7 was obtained.

[0040]

[Effect of the Invention] Unlike a certain hot stamping or heating imprint, the imprint method by this invention cannot choose a partner material (transferred object) from the former, but can also perform the imprint to the solid object of a complicated configuration easily.

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[Translation done.]